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SUBJ Evaluation of Giant Cement's status under the RCRIS Corrective Action
Environmental Indicator Event Codes (CA725 and CA750)
EPA ID Number SCD 003 351 699

FROM Elizabeth Frady

THRU Shelly Sherritt 
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Operations Engineering

TO John Litton 
Director
Division of Hazardous Waste
Bureau of Waste Management

10-25-00

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Giant Cement's status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRIS)

- 1) Current Human Exposures Under Control (CA725),
- 2) Migration of Contaminated Groundwater Under Control (CA750)

Concurrence by the RCRA Division Director Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing at the appropriate location within Attachments 1 and 2.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the third for Giant Cement. The first evaluation (9/30/97) established an "NO" code for CA725 and an "NR" code for CA750. The CA725 code was later

changed to a "YE" (9/13/99) based on changes made by the facility in the processing of their Cement Kiln Dust (CKD) as noted in the 9/13/99 memo Frady to File. The purpose of this third evaluation is to update the CA750 status code from "NR," which is no longer a valid code under the new format, to "YE."

III. FACILITY SUMMARY

Giant Cement operates a wet process cement manufacturing facility located approximately one mile north of Harleyville, SC in Dorchester County. The property consists of about 1,385 acres which includes a quarry, buffer zones, the manufacturing facility and raw material/product storage. Giant currently has a RCRA permit for container and tank storage.

IV. CONCLUSION FOR CA725

Based on available information, surface water at Giant Cement does not appear to be impacted. Giant Cement is located in proximity to several surface water areas. These areas are Four Hole Swamp, Huttos Lake, Mill Branch tributary and numerous ponded areas which are temporal or seasonal. Site drainage is controlled by means of numerous catch basins, drainage culverts and diversion ditches. The NPDES permitted discharge is to Four Hole Swamp. All analytical data in possession of the Department at this time from the NPDES information to monitoring station analysis associated with Four Hole Swamp does not indicate a surface water impact.

Soils at Giant Cement could be impacted from the site SWMUs (Solid Waste Management Units). Little analytical information exists for these units but will be provided in the future through RFI and Confirmatory Sampling activities. There are many areas at Giant at which hazardous waste is or was handled by the facility. Hazardous materials associated with the SWMUs at the facility include cement kiln dust (CKD), refractory brick, potliners, etc. Constituents of concern are metals and organics.

Human exposure to groundwater is unlikely. Giant continually dewateres a quarry so that the surficial and Floridan aquifers do not discharge into the quarry. Based on available information, groundwater at Giant does not appear to be impacted.

It is recommended that a status code of "YE" be entered for CA725.

V. CONCLUSION FOR CA750

Limited data is available regarding the quality of groundwater underlying the Giant Cement facility. Fourteen piezometers were installed into the Floridan aquifer to monitor groundwater elevation for the effects of dewatering due to mining activities. Three wells have been screened in the Black Mingo aquifer and groundwater samples from these wells have been analyzed for volatile organic compounds (VOCs). No VOCs were detected in these wells.

In accordance with Industrial Waste Permit IWP-244, Giant has installed four groundwater monitoring wells in the surficial aquifer to monitor groundwater quality at the 12-acre Industrial Landfill Facility. The 12-acre landfill is located northwest of State Highway 453 and is therefore removed from the plant operations. To the Department's knowledge, no waste has been placed in the landfill. At this time, groundwater does not appear to be adversely impacted at the 12-acre landfill.

Based on the data available at this time, a status code "YE" is recommended for CA750.

VI. SUMMARY OF FOLLOW-UP ACTIONS

A Confirmatory Sampling plan has been submitted by Giant and reviewed and commented on by the Department. Likewise, an RFI Work Plan has been submitted by the

facility and will be commented on by the Department. Data supplied by these investigations will provide more detailed and accurate information about potential contamination at the site.

Attachments	1 CA725	Current Human Exposures Under Control
	2 CA750	Migration of Contaminated Groundwater Under Control

**Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS Event Code (CA725)**

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**ATTACHMENT 1
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Code (CA725)
Current Human Exposures Under Control**

Facility Name: Giant Cement Company
Facility Address: Highway SC 453 North and I-26
Facility EPA ID #: SCD 003 351 699

- 1 Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

 x If yes - check here and continue with #2 below,
 If no - re-evaluate existing data, or
 If data are not available skip to #6 and enter "IN" (more information needed) status code

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA. The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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- 2 Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be "**contaminated**"¹ above appropriately protective risk-based levels (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater		x		
Air (indoors) ²		x		
Surface Soil (e g , <2 ft)		x		
Surface Water		x		
Sediment		x		
Subsurface Soil (e g , >2 ft)		x		
Air (outdoors)		x		

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded

_____ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation

_____ If unknown (for any media) - skip to #6 and enter "IN" status code

¹ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range)

² Recent evidence (from the Colorado Dept of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks

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Rationale and Reference(s) _____

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- 3 Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table Potential <u>Human Receptors</u> (Under Current Conditions)							
<u>"Contaminated" Media</u>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Air (indoors)	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Soil (surface, e.g., <2 ft)	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Surface Water	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Sediment	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Soil (subsurface, e.g., >2 ft)	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Air (outdoors)	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

Instructions for Summary Exposure Pathway Evaluation Table

- 1 For Media which are not "contaminated" as identified in #2, please strike-out specific Media, including Human Receptors' spaces, or enter "N/C" for not contaminated
- 2 Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway)

Note In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have assigned spaces in the above table. While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- _____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways)
- _____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor

³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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combination) - continue after providing supporting explanation

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_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s) _____

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- 4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**⁴ (i.e., potentially "unacceptable" because exposures can be reasonably expected to be 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"), or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

- _____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant "
- _____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant "
- _____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s) _____

- 5 Can the **"significant" exposures** (identified in #4) be shown to be within **acceptable** limits?

- _____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific

⁴ If there is any question on whether the identified exposures are "significant" (i.e., potentially unacceptable) consult a human health Risk Assessment specialist with appropriate education, training and experience

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Human Health Risk Assessment)

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- _____ If no (there are current exposures that can be reasonably expected to be "unacceptable")-
continue and enter "NO" status code after providing a description of each potentially
"unacceptable" exposure
- _____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status
code

Rationale and Reference(s) _____

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- 6 Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility)

 X YE - Yes, "Current Human Exposures Under Control" has been verified Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Giant Cement facility, EPA ID # SCD 003 351 699, located at Highway SC 453 and I-26 under current and reasonably expected conditions This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility

 NO - "Current Human Exposures" are NOT "Under Control "

 IN - More information is needed to make a determination

Completed by (signature) M. Elzabeth Frady Date 9/28/00
(print) M. Elzabeth Frady
(title) Project Manager

Supervisor (signature) Michelle Sherritt Date 10-23-00⁵
(print) MICHELLE SHERRITT
(title) Manager, Operations Engineering Section
(EPA Region or State) _____

Locations where References may be found

SCDHEC
8901 Farrow Road
Stern Building
Columbia, SC 29203

⁵

FINAL NOTE. THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G , SITE-SPECIFIC) ASSESSMENTS OF RISK

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Contact telephone and e-mail numbers

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ATTACHMENT 2
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: Giant Cement Company
Facility Address: Highway SC 453 North and I-26
Facility EPA ID #: SCD 003 351 699

- 1 Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e g , from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

 X If yes - check here and continue with #2 below,
 If no - re-evaluate existing data, or
 If data are not available, skip to #8 and enter "IN" (more information needed) status code

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e g , reports received and approved, etc) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i e , site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated

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Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2 Is groundwater known or reasonably suspected to be **"contaminated"**⁶ above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards guidelines guidance or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_____ If unknown - skip to #8 and enter "IN" status code

Rationale and Reference(s) _____

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Environmental Indicator (EI) RCRIS Event Code (CA750)**

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4 Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies

_____ If unknown - skip to #8 and enter IN status code

Rationale and Reference(s) _____

Environmental Indicator (EI) RCRIS Event Code (CA750)

- 6 Can the discharge of "contaminated" groundwater into surface water be shown to be **"currently acceptable"** (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁹)?

_____ If yes - continue after either 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater, OR

2) providing or referencing an interim-assessment,¹⁰ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bioassays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be **"currently acceptable"**) - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems

_____ If unknown - skip to 8 and enter "IN" status code

Rationale and Reference(s) _____

⁹ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies

¹⁰ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems

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If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination"

_____ If unknown - enter "IN" status code in #8

Rationale and Reference(s)

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Environmental Indicator (EI) RCRIS Event Code (CA750)

- 8 Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility)

X YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Giant Cement facility , EPA ID # SCD 003 351 699, located at Highway SC 435 & I-26 Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected

_____ IN - More information is needed to make a determination

Completed by (signature) M. Elizabeth Frady Date 9/28/00
(print) M. Elizabeth Frady
(title) Project Manager

Supervisor (signature) Michelle Sherritt Date 10-23-00
(print) MICHELLE SHERRITT
(title) Manager, Operations Engineering Section

Locations where References may be found

SCDHEC
8901 Farrow Road
Stern Building
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